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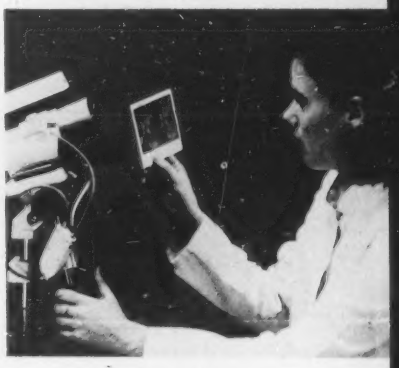
THE SILVER INSTITUTE LETTER

INFORMATION ON SILVER FOR INDUSTRY

VOLUME XIV NUMBER 6 DECEMBER 1984

INSTANT MEDICAL IMAGES AT THE TOUCH OF A BUTTON

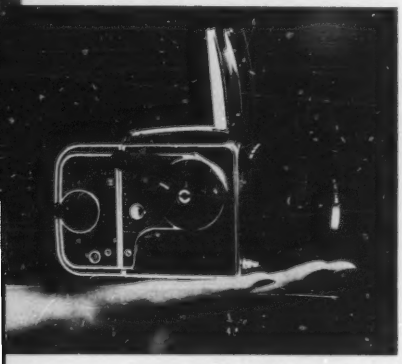


Through the magic of silver halide instant photography, physicians are now able to make instant images of what they see directly or on video monitors during diagnosis. This is proving especially valuable in the widening use of ultra sound video imaging of internal organs, and in obstetrical examinations as shown in the photo. For this, Polaroid has developed the Model CB-33 Auto-Film Camera Back and three silver halide AutoFilms. The first converts whatever is on a video screen into an instant positive black and white print. The second produces an instant "X-ray film" negative black and white transparency, and the third provides instant stereoimages in color.

With the 5 volt or 12 volt powered Camera Back, a film is immediately on demand automatically exposed, developed, and ejected, for further study and reference.

This extraordinarily convenient system is now being used also in computer graphics, advertising photography, and geological photography. The automatic Camera Backs loaded with any of these new Polaroid silver halide films, may be attached to a video or optical camera, or to a video monitor to provide instant permanent records.

NEW CAMERAS PROVIDE GRAINLESS BRILLIANCE AND CLARITY USING LARGER SILVER HALIDE FILMS



The electronics that popularized the 35mm camera are now fully expressed in a new generation of **medium format cameras** with their larger 120-size films (80mm or 2¼ by 3¼ inches) which **use more than 5 times as much silver halide per photo** as 35mm films. The 120 size, popular two generations ago, brought the ease of hand-held photography to both amateurs and professionals alike, but when the 35mm cameras matured in capability, the larger, often slower working cameras faded from popularity. Today, leading camera manufacturers throughout the world are producing medium format cameras whose **larger silver halide film size** provides its inherent grainless brilliance and clarity with the ultimate in fully automated operation.

An example of the new types is the Hasselblad 2000FC/M, shown at the upper left. This camera is the now fully automated version of the one the astronauts took to the moon. Its new features include an electronically-governed operation whose electrical contacts are plated with **silver**, gold and palladium to assure flawless performance. It is powered by a six-volt **silver oxide** battery that provides ample power to operate its many automated features.

The field of fully-automated larger format, 120-size film cameras that make full use of their size advantage, is growing in popularity in many countries. The newly designed Zenza Bronica GS-1, packed with electronic features has a wide selection of interchangeable film magazines. The new Rolliflex 6006, is now supplied with eight interchangeable lenses to meet any photographic condition.

In addition, the new Linhof Technikardon, with its **4 by 5 inch film** format, and the Arca Swiss, with a **6 by 9 inch film**, offer full automation with the addition of corrective photography by use of their ultraflexible bellows that permits full adjustment of the lens to correct for difficult conditions.

An additional flexibility of these automated cameras is that they all can accommodate Polaroid large size silver halide instant film packs, the ultimate in photographic immediacy. The sophisticated silver chemistry of the instant photographic system provides both professional and amateur alike an instant statement of results. It is this promptness that allows the photographer to monitor his skill in using this new generation of cameras, at the site, rather than later in the photographic laboratory.

MINERS PROVIDE NEEDED SILVER

The Silver Institute's publication *Mine Production of Silver 1983–1987* has just been completed. It shows 1983's actual production and projections for 1984, 1985, 1986 and 1987 for each of the silver mining countries of the world. To meet the world demands for silver in photography, investment, sterlingware, coinage and industry, mine production in 1984 is scheduled to be 408.3 million troy ounces or 2% more than 1983's 402.2 million ounces. Annual growth rates are projected for 1985 — 5%, 1986 — 2% and 1987 — 1%.

The report shows annual figures for each of the 58 silver producing countries. Eight countries are producing 80% of the mine output, with 50 countries producing the remaining 20%, as shown below for 1984.

COUNTRY	MILLION TROY OUNCES	PERCENT OF TOTAL
Mexico	67.0	16%
Peru	55.2	14%
USSR	52.4	13%
United States	46.6	11%
Canada	41.5	10%
Australia	29.4	7%
Poland	22.1	5%
Chile	14.8	4%
50 Other Countries	79.3	20%
World Total	408.3	100%

Mine Production of Silver 1983–1987 including names of the 246 mining and related enterprises which cooperated in its preparation is available without charge from The Silver Institute, 1001 Connecticut Ave. N.W., Washington, D.C. 20036.

MORE CHOICES OFFERED THE SILVER INVESTOR

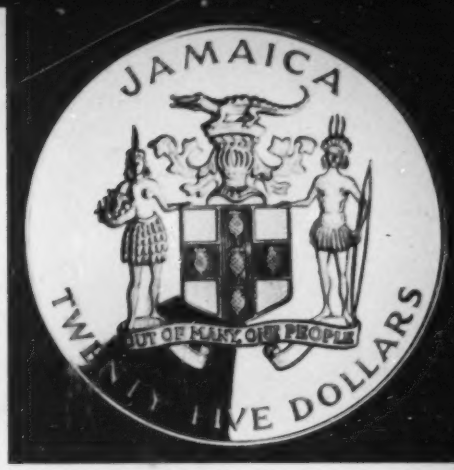
Silver is available to the investor in many attractive forms ranging from beautifully struck coins to impressive solid bars. A new series of silver investment bars now offered to investors is called "Royal Silver". Issued by the prestigious Royal Canadian Mint in 999+ silver, the bars are available in 100 troy oz., 10 troy oz., and 1 troy oz. sizes. These attractive bars, pictured below, are being supplied to selected dealers by the Silver Investment Group of North America (SIGNA), 170 Westminster St., Providence, RI 02903 (telephone: (401) 831-3550, or in the U.S. only, 1-800-227-1401).

Investor consumption of silver, as reported in the October issue of The Silver Institute Letter continues to move toward surprising levels of consumption. The Libertad, the 1982 Mexican 999 fine silver bullion coin which was recently released for sale, has sold out the one million coins available according to the distributor, A-Mark Precious Metals, Inc. It is expected that the 1983 mintage will also be sold out quickly, and the 1984 mintage will begin in January 1985. The 1984 mintage will be the last limited issue of the Libertad; the 1985 and later mintages will be issued in response to the demand. An extensive marketing program will support the 1985 bullion coin. The coin is available through local coin dealers.

The U.S. Olympic silver coins present another attractive alternative to the silver investor. U.S. Treasurer Katherine D. Ortega announced that over 4 million silver Olympic coins have been sold to date. By law, the production of the coins will cease December 31, 1984, and their sale terminated January 17, 1985. The U.S. Olympic coins continue to sell well, supported by an accelerated campaign, including the brochure produced by The Silver Institute. By the end of November the sales of the Olympic coins had raised $65.2 million for the U.S. Olympic Committee. Those

wishing to purchase the coins before the January deadline should call 1-800-USA-MINT.

One of the most interesting of the silver coins is the popular Jamaica $25 sterling silver coin now redesigned for 1984, pictured, at right. It contains over 4 troy ounces of silver, and at 63mm in diameter is the world's largest silver proof coin. Minted in a limited issue, it is available from Paramount International Coin Corporation, P.O. Box 569003, Miami, Florida 33256-9003, telephone: 1-800-327-9853.



FILM "SILVER" IN DEMAND

The U.S. Bureau of Mines reported that in the quarter ended September 30th, 1984, The Silver Institute film "SILVER" was shown 1,229 times in schools and colleges across the United States. It was seen by nearly 36,000 viewers and is the third most popular industry sponsored film handled by the Bureau. The Silver Institute gave 300 copies of the film to the Bureau and they are available on loan across the country, by contacting: Motion Pictures, Bureau of Mines, U.S. Department of the Interior, 4800 Forbes Avenue, Pittsburgh, PA 15213.

Those wishing to purchase copies of the 16mm color sound film or Betamax, VHS or ¾" Commercial TV cassette versions, should contact The Silver Institute, 1001 Connecticut Ave., N.W., Suite 1140, Washington, D.C. 20036. The films and the cassettes are available in English, Spanish, French, German or Japanese.

NEW SILVER TECHNOLOGY LEADS TO MORE USES OF SILVER

Our economy is benefitting from millions of troy ounces of silver which are being used today in ways not applied when NEW SILVER TECHNOLOGY first began publication in January 1974. For each quarterly issue, The Silver Institute researches developments throughout the world on advantageous uses of silver, and summarizes them for those who can benefit by applying them.

New Silver Technology has proved to be of great value to those who can beneficially use silver and silver products, and also to those who wish to be aware of what is being developed for future silver use.

The cost of this work is principally carried by The Silver Institute, with a nominal subscription charge of US$30 per year toward printing and postage. For those who are not already subscribing, there is a convenient coupon to send, at the bottom of this page.

Following are a few of the subjects of the 240 full Summaries of interesting developments presented in the 1984 issues.

- Study of aluminum-silver cast alloys for aircraft; at Lehigh University, USA.
- Silver plating of fibers and fabrics for electric resistance heating, electromagnetic screening and radar reflection: at Instytut Wlokien Chemicznych, Poland.
- New imaging material for volume use in graphic arts, made with silver chloride and silver stearate with dry development by simple heating; at 3M Corp. USA.
- High energy thermally activated batteries made with silver nitrate and lithium salts; at Department of Navy, USA.
- Lower cost, higher efficiency solar cells built around webs of silver fibers: at Siemens AG, Germany.
- Improved formaldehyde production catalyzed by silver crystals on screens of silver-gold alloy: Dupont, USA.
- Versatile multilayer silver-containing wound dressing; University of Strathclyde, Scotland.
- Electroconductive adhesives made with silver flake for bonding electronic parts; at Toyo Inc. Manufacturing Co., Japan.

ORDER FORM FOR Annual Subscription to NEW SILVER TECHNOLOGY
Enclosed is a check for US$30.00
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The Silver Institute, 1001 Connecticut Ave., N.W., Washington, D.C. 20036

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JAPANESE USE MORE SILVER

Silver Institute analysis of the latest figures from the Japan Mining Association shows the following monthly averages of the troy ounces of silver used for photo products, mirroring, soldering, brazing, plating, electrical and electronics systems, and other applications in Japan.

Average Troy Ounces of Silver Used per Month		
Year 1983	JAN--SEPT 1984	Change
5,999,800	6,408,300	+408,500

LATEST SILVER INSTITUTE REFINING STATISTICS

Production and Disposition of **999 Silver** by All Known Refiners in the United States

	TROY OUNCES		MILLION TROY OUNCES		
	October 1984	September 1984	Jan-Oct 1984	Jan-Oct **1983	Full Year 1983
THESE REFINERS' PRODUCTION, BY SOURCE			*MONTHLY RATE*		
From Primary (ores & concentrates)	2,712,169	4,387,199	4.5	4.4	4.4
From Coins	0	0	0.0	0.0	0.0
From Old Scrap (used photo film & other products)	3,376,839	2,584,073	2.8	3.0	3.1
From New Scrap (in-plant clippings, waste)*	2,296,560	1,999,586	1.9	1.6	1.8
TOTAL PRODUCTION	8,385,568	8,970,858	9.2	9.0	9.4
DISPOSITION BY THESE REFINERS					
Converted in Plant (consumed in fabricating, etc.)	3,959,558	3,252,484	3.3	3.0	3.3
Shipped Out as 999 Silver	4,567,312	5,362,205	5.8	5.8	6.0
TOTAL DISPOSITION	8,526,870	8,614,689	9.0	8.8	9.3
RESULTING CHANGE OF THESE REFINERS' STOCKS (Production Minus Disposition)	−141,302	356,169	*TOTAL FOR PERIOD* 1.9	1.6	0.3
THESE REFINERS' STOCKS AT END OF PERIOD	3,014,451	3,155,753	3.0	2.6	1.2

Production and Disposition of **999 Silver** by All Known Refiners in Australia, Canada, Mexico, Peru, South Africa, Sweden, and West Germany; and some other Refiners in Europe and Asia.

	TROY OUNCES		MILLION TROY OUNCES		
	October 1984	September 1984	Jan-Oct 1984	Jan-Oct 1983	Full Year 1983
THESE REFINERS' PRODUCTION, BY SOURCE			*MONTHLY RATE*		
From Primary (ores & concentrates)	15,095,611	14,767,314	13.6	12.9	13.1
From Coins	86,914	80,396	0.1	0.3	0.2
From Old Scrap (used photo film & other products)	4,557,777	4,332,482	4.0	6.1	6.0
From New Scrap (in-plant clippings, waste)*	1,074,762	983,944	0.9	1.1	1.1
TOTAL PRODUCTION	20,815,064	20,164,136	18.6	20.4	20.3
DISPOSITION BY THESE REFINERS					
Converted in Plant (consumed in fabricating, etc.)	2,133,166	1,761,656	1.6	3.3	3.2
Shipped Out as 999 Silver	18,177,880	16,161,255	16.8	17.1	17.1
TOTAL DISPOSITION	20,311,046	17,922,911	18.4	20.4	20.2
RESULTING CHANGE OF THESE REFINERS' STOCKS (Production Minus Disposition)	504,018	2,241,225	*TOTAL FOR PERIOD* 1.6	0.0	1.2
THESE REFINERS' STOCKS AT END OF PERIOD	7,479,339	6,975,321	7.5	4.7	5.9

* PRODUCTION From New Scrap is 999 silver made from in-plant clippings, spillage, sweepings, etc., generated during manufacturing processes. ** Includes figures of additional refiners.

THE SILVER INSTITUTE
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THE SILVER INSTITUTE LETTER

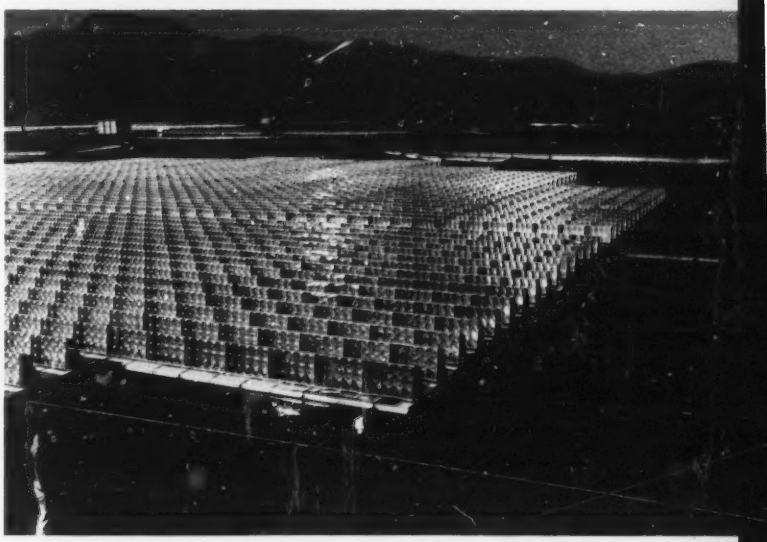
INFORMATION ON SILVER FOR INDUSTRY

VOLUME XV NUMBER 1 FEBRUARY 1985

SILVER CRITICAL FOR 3 MILLION WATT SOLAR SYSTEM

The successful development of solar technology as a renewable source of energy has in large measure been dependent upon the electrical and reflective properties of silver. Production of solar photovoltaic cells is the most rapidly growing segment of the market for renewable energy equipment. It is estimated that purchase of these cells in the U.S. alone has reached $150 million annually and is increasing at nearly 50% a year. The potential market is projected to be $1 billion by 1990, and ten times that before the end of the century. A similar rate of growth is expected to occur in Europe. Silver provides the main conducting network carrying the electricity generated by the solar cell into power output cables.

The United Energy Corporation, 420 Lincoln Centre Drive, Foster City, CA 94404, determined that photovoltaics, the conversion of sunlight directly into electricity, had the greatest potential for the most economical conversion of sunlight to electric power and concentrated its efforts in that field. A UEC research team designed a system that would efficiently capture solar energy in a utility-scale power plant. Pictured at right is the realization of that system. Shown is a 208-foot diameter solar pond containing 75 power generating units. Each unit consists of a series of fresnel lenses that concentrate the sunlight onto the photoelectric cells. Because the entire system is afloat, it is rotated continuously to face the sun.



Each of the UEC solar ponds generates 187,000 watts of electricity that is directly fed into the Southern California Edison Company power grid. At the Barstow, California, solar farm, a portion of which is shown at right, there is a total of 15 ponds. Two other 15-pond farms are located at Davis and Borrego Springs, California. Each of the farms supplies 3 megawatts of electricity to southern California's power grid.

The UEC research team's next challenge is a solar energy sufficient 25-acre family farm. The silver-based solar photovoltaic cells will generate all the energy required to completely operate the farm's lighting, heating, and cooling. Some of the heat will be used to maintain a biomass large enough to generate ethanol motor fuel, high-protein animal food, and nutrients for fruit and vegetables, providing the family farm with all of the energy needed to make farming in remote areas feasible!

STATUE OF LIBERTY COINAGE PROPOSED

January 3, 1985, was a day of change in the silver coinage world.

The Silver Institute staff was invited by the U.S. Treasury to participate in a ceremonial defacing of the dies used to mint the Olympic Coins. The defacing took place in the Treasury Cash Room, and was presided over by Katherine D. Ortega, U.S. Treasurer, shown at left. This marked the end of the production of Olympic Coins, although sales continued through January 18, 1985, and were 4.3 million by the end of the program.

On that same day Congressman Frank Annunzio, Chairman of the House Consumer Affairs and Coinage Subcommittee, introduced legislation proposing the minting and sale of coins commemorating the centennial of the Statue of Liberty. The sales of these silver coins, along with gold and copper-nickel versions, are intended to raise $137.5 million toward the restoration of the Statue of Liberty.

SILVER PERMITS INSTANT SLIDE SYSTEM

Teachers, lecturers, indeed anyone who has to make a formal presentation of any kind, now have a new ally: the Kodak Instagraphic color slide reproduction system. Pictured at right is a non-professional photographer copying an illustration that will be reproduced with silver-based film immediately into slide format. "The new family of Kodak Instagraphic products will benefit anyone who has a need to communicate visually—from professional audiovisual producers to those who have never made or used a slide," said William A. Koch, vice-president, Motion Picture & Audiovisual Markets Division, Eastman Kodak Company, 343 State Street, Rochester, NY 14650.

The new system produces a high-quality, color-rich 3- by 4-inch transparency that can be used full size, or, as in the case of the 35mm transparency copier, only the center portion trimmed and mounted in 2- by 2-inch slide holders. An adapter for mounting the Instagraphic slide camera on computer scope faces is also part of the system. "New computer and other business machine technologies have given individuals immediate access to great quantities of information," said Koch. "Kodak Instagraphic products are designed to make it easier to share that information."

Kodak Instagraphic products include color print film which is used with the new Kodak Readyprint Instant photo identification system. This latter system is useful for licensing bureaus, hospitals, banks, health clubs, and any organization that requires badges or passes. These new products, relying on the versatility and predictability of silver, offer a variety of cost-effective options for quick response to the needs of many organizations.

SILVER INSTITUTE MEETING IN WASHINGTON

During a meeting of The Silver Institute Board of Directors at the International Club in Washington, D.C., President Richard de J. Osborne presented the recommendations of the Executive Committee for the Institute's 1985 program to extend uses of silver in industry, the arts, and as investment. At the meeting, presided over by Chairman William A. Griffith, were officials of member companies from Canada, Japan, Mexico, Peru, and the United States. Mr. Geoffrey Lloyd Rae of Broken Hill Associated Smelters Pty. Ltd., Melbourne, Australia, was elected a Director. John H. Boyd, Chairman of the Operations Committee, and Richard L. Davies, John H. Lutley, and Samuel F. Etris of the staff, described the work which is progressing on silver in catalysis, bearings, solders; and new programs on welding steel, alloys, silver coin programs, and light-weight sterling silver items. All of these are in addition to the regular work of the Institute in statistics, new silver technology, modern silver coinage, newsletters, and as a central information source on silver and silver products. The representatives of member companies expressed appreciation and support for these programs.

Attending the Institute meeting were (Top l to r): Richard Osborne of ASARCO, President of The Silver Institute; Thomas Campbell, Nerco Minerals; Institute Vice President, Justin Rice, Coeur d'Alene Mines; (Middle l to r) Carl Peterson, Engelhard; John Boyd, Kennecott, Chairman, Operations Committee; William Griffith, Institute Chairman, Hecla Mining; Enrique Ibarra, Cia. de Real del Monte y Pachuca; (Lower l to r) Seiya Yoshida, Nippon Mining; Seiichi Ohtsuki, Mitsubishi Metal; Richard L. Davies, Executive Director of the Institute; Takeshi Inaba, Tanaka Kikinzoku Kogyo K.K.; Nobuyasu Ishida, Nippon Mining; Simon Strauss, Founding Director; Sharon Ziemian, Merrill Lynch Metals; Charles Snead, Jr., Callahan Mining; Arthur Brown, Hecla Mining; Carlos Loret de Mola, Cia Minera Huampar; and Edward Jette, Johnson Matthey Commodities.

SYMPOSIUM TO REINFORCE SILVER'S POSITION IN MULTIBILLION DOLLAR MARKET

The Silver Institute and the American Chemical Society are jointly arranging a symposium of major research work on silver as a catalyst in the production of the building blocks of the chemical industry. Worldwide sales of catalysts have reached $1.6 billion, and the value of products made with aid of catalysts is nearing $500 billion. Silver catalysts are established in the production of chemical building blocks for long-life, high-strength engineering plastics. These plastics are used for replacing metal or rubber in automobiles, food processing equipment, irrigation systems, and consumer products. There is the potential for their use in the production of other kinds of basic chemicals.

The meeting is designed to bring into focus the front lines of research on silver catalysts to provide the base for their wider use. Research scientists from universities, national laboratories, industry, and a research institute representing four countries will present papers. These will range from current industrial experience to the latest theories on silver catalysis.

The symposium is being presented at the 189th Annual Meeting of the American Chemical Society, Miami Beach, Florida; May 1-2, 1985. Further information can be obtained by contacting The Silver Institute.

SILVER FOR THE MASS MARKET

Investors now have the opportunity to purchase silver in smaller, more affordable sizes. The introduction of "American Prospectors" medallions in 1/2-ounce, 1/4-ounce, and 1/10-ounce weights, in addition to the original 1-ounce weight, was announced recently by Silver Institute member Engelhard Corporation, 70 Wood Avenue South, Iselin, NJ 08830.

WIDE ADVANCES IN SILVER USES

The first 1985 quarterly issue of NEW SILVER TECHNOLOGY presents 60 one-page summaries of silver use developments by industrial companies, universities, government agencies, and individual researchers in 14 countries. The four 1985 issues are available for US$30 including postage from The Silver Institute. Following are some of the interesting advances described in the January 1985 issue:

- Ford Motor Co. of Canada uses an improved system for silver paste defoggers and deicers for backlights of automobiles.
- Degussa has developed circuit breakers to withstand 19,000 amperes, made of silver with tin oxide and tungsten, and a silver alloy to bond the compositions directly to copper carriers.
- Hughes Research Laboratories in California has developed the most efficient fiber so far for transmitting infrared laser communications. It is single crystal silver bromide which can be made on an industrial scale.
- Improvements in the efficiencies of equipment using silver to convert the sun's rays into electric power have been made by the University of South Wales in Australia, and Katholieke Universiteit in Belgium.
- Improved silver compound films which are developed by simple heating without wet processing are now produced by 3M Corporation in Minnesota, and by Oriental Photo Industrial Co. Ltd., in Japan.
- AT&T Bell Laboratories has found efficient non-cyanide systems for plating silver using silver oxide and polyamines and for plating silver palladium alloys, using lithium chloride, along with silver and palladium chlorides.
- At the University of Florida, fine cold pressed silver powder was found to be better than any other substance used, as heat exchanger to maintain temperatures close to absolute zero for superconducting electrical systems and for fusion power.

VISITOR TO SILVER INSTITUTE'S ADMINISTRATIVE OFFICE

Among the recent visitors to the Institute's Washington offices was Mr. Alfredo Dammert of Empresa Minera del Centro del Peru S.A., who came to consult on possible silver coinage programs for Peru.

1984 REFINED SILVER USAGE INCREASED 7% WHILE PRODUCTION DECREASED 5%

As shown below the **total production** of refined silver by U.S. plus non-U.S. participants in The Silver Institute refining series **decreased by 5.6%** from 356.3 million troy ounces in 1983, to only 336.3 million troy ounces in 1984. It will be seen that while production from ores increased, there was a much greater decrease in production available from secondary materials.

The separate Silver Institute Conversion Series, showing **consumption** of refined silver, has a smaller proportion of world participants, but they are considered to be typical. Their U.S. plus non-U.S. consumption of refined silver **increased by 6.8%** from 200.8 million troy ounces in 1983 to 214.5 million troy ounces in 1984.

LATEST SILVER INSTITUTE REFINING STATISTICS

Production and Disposition of **999 Silver** by All Known Refiners in the United States

	TROY OUNCES		MILLION TROY OUNCES		
	December 1984	November 1984	Full Year 1984	Full Year **1983	Full Year 1982
THESE REFINERS' PRODUCTION, BY SOURCE					
From Primary (ores & concentrates)	5,468,610	4,685,114	55.3	52.8	44.3
From Coins	0	0	0.0	0.3	0.1
From Old Scrap (used photo film & other products)	3,391,503	3,645,434	35.2	37.1	40.0
From New Scrap (in-plant clippings, waste)*	5,059,864	1,869,792	25.9	22.0	23.9
TOTAL PRODUCTION	13,919,977	10,200,340	116.4	112.2	108.3
DISPOSITION BY THESE REFINERS					
Converted in Plant (consumed in fabricating, etc.)	6,539,029	3,816,831	43.1	40.0	38.0
Shipped Out as 999 Silver	7,733,232	5,120,798	70.5	72.0	70.5
TOTAL DISPOSITION	14,272,261	8,937,629	113.6	112.0	108.5
RESULTING CHANGE OF THESE REFINERS' STOCKS (Production Minus Disposition)	−352,284	1,262,711	2.8	0.3	−0.3
THESE REFINERS' STOCKS AT END OF PERIOD	3,924,878	4,277,162	3.9	1.2	0.9

Production and Disposition of **999 Silver** by All Known Refiners in Australia, Canada, Mexico, Peru, South Africa, Sweden, and West Germany; and some other Refiners in Europe and Asia.

	TROY OUNCES		MILLION TROY OUNCES		
	December 1984	November 1984	Full Year 1984	Full Year 1983	Full Year 1982
THESE REFINERS' PRODUCTION, BY SOURCE					
From Primary (ores & concentrates)	10,706,993	13,982,472	160.5	157.4	141.0
From Coins	74,216	50,716	1.2	2.6	6.9
From Old Scrap (used photo film & other products)	3,422,140	4,146,781	47.1	71.5	49.4
From New Scrap (in-plant clippings, waste)*	951,476	957,286	11.0	12.6	23.6
TOTAL PRODUCTION	15,154,825	19,137,255	219.9	244.1	220.9
DISPOSITION BY THESE REFINERS					
Converted in Plant (consumed in fabricating, etc.)	1,332,759	2,131,587	19.8	38.1	39.2
Shipped Out as 999 Silver	15,447,637	17,603,351	200.7	204.9	184.8
TOTAL DISPOSITION	16,780,396	19,734,938	220.5	243.0	224.0
RESULTING CHANGE OF THESE REFINERS' STOCKS (Production Minus Disposition)	−1,625,571	−597,683	−0.6	1.2	−3.1
THESE REFINERS' STOCKS AT END OF PERIOD	5,256,085	6,881,656	5.3	5.9	4.7

* PRODUCTION From New Scrap is 999 silver made from in-plant clippings, spillage, sweepings, etc., generated during manufacturing processes. ** Includes figures of additional refiners.

THE SILVER INSTITUTE

A WORLDWIDE ASSOCIATION OF MINERS, REFINERS, FABRICATORS AND MANUFACTURERS

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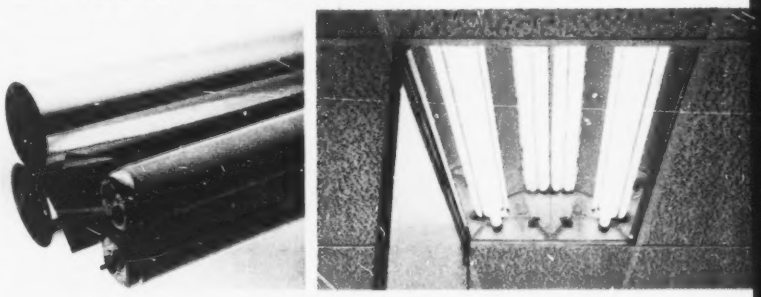
THE SILVER INSTITUTE LETTER

INFORMATION ON SILVER FOR INDUSTRY

VOLUME XV NUMBER 2 APRIL 1985

SILVER INCREASES FLUORESCENT LAMP OUTPUT 50 TO 60 PERCENT

Silver is the most reflective material ever discovered, reflecting about 96% of incident light striking its surface. Solar energy power plants rely upon silver as the most efficient mirrors for concentrating solar radiation onto boilers or photovoltaic cells for power generation. A new development now puts this powerfully reflective element into handily useable form. The 3M Company, 3M Center, St. Paul, MN 55144, has developed a high performance silver-coated Mylar film with a pressure sensitive backing that can be applied to any non-porous material. **A layer of pure silver provides the 3M Silverlux™ with its greater than 95% reflectance.** The silver coating is protected by a polymeric film applied to seal the silver from outdoor weathering, preventing tarnishing.



A roll of Silverlux™, a silver-coated, adhesive-backed Mylar film, shown at left along with a flourescent lamp, is easily applied to flourescent lamp fixtures shown at right to increase the light by 50% to 60%, allowing similar reductions in wattage and consequent reductions in air conditioning.

The adhesive-backed Silverlux™ specular silver film is readily applied permanently to fluorescent fixture reflectors in homes, offices, and factories, providing an **increase in light output of over 50%**, without any increase in wattage or input power. Or, if only the same amount of light is desired, use of Silverlux™ film to retrofit fluorescent lamp fixtures will permit a reduction of power usage, which can repay the investment in less than two years; and in new installations, power savings are even greater. In addition, every calorie of heat that a lamp produces must be drawn off by the air-conditioning system. Thus, providing the same amount of light with a reduction in wattage (which may be accomplished either by removing tubes or substituting lower wattage tubes) **reduces air conditioning as well as lighting costs.**

By coincidence, **silver is also vital in manufacturing the base material** which carries the brilliant reflecting metal: an extremely strong Mylar polyester that will stretch as much as 100% before failing. This is one of a large class of commercially important flexible plastics that are made from ethylene oxide, a major chemical building block formed by passing ethylene and air over **silver catalysts**.

STERLING SILVER—THE INCENTIVE USED WITH PRIDE

James Blucher, Incentive Sales Manager, Kirk-Stieff Company, reports increasing sales of sterling for incentive programs. "Sterling silver has a value of precious metal enthusiastically appreciated by the recipient," he says. "Every wife knows its value. She knows that it has longevity, and with reasonable care it won't wear out. It is cherished, but more than most precious metals, it can be put to practical, every day use, with pride."

Silversmith companies report growing sales of sterling silver as premier awards for incentive programs. With stable silver prices, **sterling silver items now appear in every price class of incentive and service awards**. Nominally-priced sterling pieces begin with book marks, luggage tags, candle snuffers, money clips, and letter openers. These can be economically incorporated even into the lowest award categories. Sterling silver flatware and holloware pieces fit well into all of the higher price-point levels of recognition awards and prizes.

Precious sterling silver incentive pieces are available for every price-point award level.

Its timeless beauty has encouraged producers of sterling silver to use historically significant designs for serving forks, spoons, and ladles—offerings that are low in cost for any incentive program, yet elegant for any table. Sterling silver provides incentive managers with a precious metal option, of highly recognized value, with practical utility and great desirability.

NEW SILVER PIECES CAPTURE WIDE INTEREST

For the second time, a U.S. Olympic coin has won the worldwide "Coin of the Year" competition sponsored by Krause Publications, Iola, WI, publishers of *Numismatic News*, *World Coins News*, and *Coins Magazine*. The program was initiated to encourage both good coin design and good marketing programs. An international panel of 50 mint officials, coin and medal collectors, and others gave top honors to the 1983 Olympic Silver Dollar, among the 42 coins of 1983 that merited critical praise. Great support came from non-U.S. judges, who voted it the overwhelming winner as the **most popular coin** of the 1983 issues, and also the **best of the crown-sized pieces**.

The 1985 sterling silver Falkland Islands £25 coin is 65 millimeters in diameter and weighs 150 grams.

Coins from the People's Republic of China were likewise applauded. The 1983 China 10 Yuan Silver Panda was selected as the **best silver coin**, and the 1983 China 5 Yuan Silver Marco Polo Commemorative coin as the **most historically significant**.

In another vein, a new record has just been established by the British Royal Mint with the minting of what is believed to be the **world's largest silver legal tender coin** ever issued. The 1985 £25 sterling silver Falkland Islands coin has a diameter of 65 millimeters and weighs 150 grams or nearly 5 troy ounces. It is a unique one-year-of-issue coin, the first to feature the new effigy of Elizabeth II, by Raphael Maklouf. The reverse of the coin, designed by Michael Hibbit, depicts the S.S. Great Britain, the world's first iron-hulled ship, launched at Bristol in 1843.

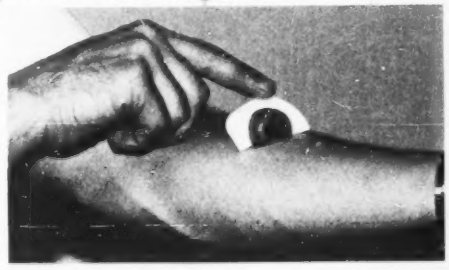
The 1985 sterling silver medal commemorating the visit of His Holiness John Paul II to Peru, February 1985.

Of interest to medal collectors is a new limited issue of a sterling silver medal commemorating the visit of His Holiness Pope John Paul II to Peru in February 1985. The 47 millimeter diameter, 44 gram medal depicts a full image of His Holiness, with the Cathedral of Lima in the background, and on the reverse the symbols of the principles defended by the Pope. The original sculpture was accomplished by Ambrogio Consonni, acclaimed medal artist, of Milan, Italy. The medals may be obtained from Banco de Credito del Peru, 410 Park Avenue, 9th Floor, New York, N.Y. 10022.

SILVER BATTERIES TO JOIN THE FIGHT AGAINST DISEASE

Transdermal medication, a newly developed method for administering drugs through the skin, has been limited in its use by the size of the drug molecule being prescribed. The use of tiny, watch-sized, silver-based batteries is aimed to eliminate that limitation.

Astronauts and deep water sailors find the thumb-nail sized, flexible patches containing motion sickness drugs placed just behind the ears to be a simple, sure solution for long-period drug administration. The tiny patches release just the right amount of pharmaceutical through the skin, preventing overdose while still maintaining an adequate supply over extended periods.



Transdermal medication patch. The delivery of large-molecule drugs through the skin by this tiny patch is being made possible by the use of silver-based, wristwatch sized batteries.

Transdermal medication allows precise dosages of drugs to move directly into the bloodstream, by-passing the digestive system that in some cases reduces the effectiveness or even destroys complex pharmaceuticals. Large-sized, complex molecules, not previously susceptible to transdermal application, may be useful to treat cancer, ulcers, glaucoma, asthma, allergies, hypertension, diabetes, and for contraception. Since the large molecules will not of themselves move through the skin, Lectec Corp., 10205 Crosstown Circle, Eden Prairie, MN 55344, has devised the means for overcoming this problem: **an imposed electric current from a Silver battery pushes the**

large molecule drug ions through the skin, providing the desired medication. These tiny silver-based, watch-sized batteries will allow the thumb-nail sized transdermal patches to be miniaturized and easily used for the important large molecule medications.

With the use of the silver based batteries, any area of the largest human organ of all, the skin, becomes an efficient channel for administering beneficial drugs into the body.

NEW MEMBER WELCOMED

The Silver Institute welcomed to membership **Banca Cremi**, Sociedad Nacional de Credito, Division de Metales y Minerales, Juarez 4 Piso 2, Col. Centro, Mexico, D.F., Mexico 06050, with Lic. R. Hermilo Lopez Coello, Subdirector Ejecutivo, as Official Representative.

SILVER'S STORE OF VALUE GAINS WIDE ACCEPTANCE BY INVESTORS

In recent months, silver refiners and bullion dealers have experienced an unprecedented demand for small silver bars and coins. Carlos Ruiz Sacristan, Treasurer, Banco de Mexico (Mexico's Central Bank), announced the complete sellout of one million each of the 1982, 1983, and 1984 Libertads, the one-ounce 999 fine silver Mexican legal tender coins. The 1982 issue was first offered for sale in September 1984 and sold out in November. The 1983 issue was then released and its supply exhausted in less than six weeks. In January 1985, the 1984 issue was released and is now sold out. The 1985 issue of the Libertad is now being minted and issued.

Jack Albans, President, Sunshine Bullion Company, said, "The industry is experiencing incredible sales of silver pieces and is having difficulty in keeping up with the demand. **Silver is a highly active investment vehicle** for the U.S. public, who are tremendous buyers of silver at the right price."

Norman O. Eaton, Manager of Gold and Silver Sales, ASARCO Inc., New York, sees the small silver bar and coin market catching the public interest like wildfire. He said that supplies of secondary silver are decreasing, and he believes that "investor demand may top 50 million to 75 million troy ounces this year if the price continues at about the first quarter levels."

Prices per Troy Ounce of Silver in Various Currencies

COUNTRY	CURRENCY	1/2/85	4/1/85	% CHANGE
Argentina	Pesos (100s)	9.47	20.53	+116.70%
Peru	Soles (1000s)	28.96	51.39	+77.45%
Uruguay	PesosN (100s)	4.31	6.16	+42.92%
Brazil	Cruz (1000s)	19.34	27.49	+42.14%
Israel	Shekels (100s)	38.98	53.99	+38.51%
Australia	Dollars	7.48	9.50	+27.00%
Chile	Pesos (100s)	7.76	9.38	+20.88%
Colombia	Pesos (100s)	6.85	7.95	+16.06%
Mexico	Pesos (100s)	13.68	15.77	+15.28%
Venezla	Bolivares	76.50	84.47	+10.42%
Canada	Dollars	8.07	8.80	+9.05%
Greece	Drchms (100s)	7.88	8.59	+9.01%
Portugal	Escuds (100s)	10.32	11.14	+7.95%
Singpore	Dollars	13.35	14.32	+7.27%
Italy	Lire (1000s)	11.89	12.75	+7.23%
China	Yuan	17.03	18.16	+6.64%
SaudArab	Riyals	21.87	23.23	+6.22%
Swtzlnd	Francs	15.98	16.92	+5.88%
Japan	Yen (100s)	15.37	16.24	+5.66%
USA	Dollars	6.11	6.44	+5.50%
Sweden	Kronor	55.16	58.01	+5.17%
HongKong	Dollars	47.76	50.21	+5.13%
India	Rupees	75.94	79.64	+4.87%
Spain	Psetas (100s)	10.67	11.16	+4.59%
Ecuador	Sucres (100s)	7.30	7.62	+4.38%
Belgium	Francs (100s)	3.89	4.04	+3.86%
Denmark	Kroner	69.18	71.46	+3.30%
WGermany	D Marks	19.37	20.00	+3.25%
Nethlnds	Guilders	21.85	22.56	+3.25%
Austria	Shillings	135.96	140.35	+3.20%
France	Francs	59.25	61.03	+3.00%
SoAfrica	Rands	12.28	12.38	+0.81%
Britain	Pounds	5.31	5.26	−0.94%
Philppns	Pisos	121.37	118.65	−2.24%

"TRANSLATION OF MONEY"

When people in many parts of the world **speak of "money" they use their word for "silver"**: French speakers say "argent", Spanish speakers say "plata", etc.

Also in many countries, every day, people **translate some of their own currencies into silver**. This may be in the form of beautiful sterling silver pieces, silver for millions of photographic films, silver for thousands of industrial products, or silver coins and bars.

In the free markets of the world the values of the various currencies in relation to the value of silver continually change.

The Table at the right shows the price per troy ounce of silver in the currencies of 34 countries on the first business day of 1985, and again, after three months, the price per troy ounce of silver on April 1. The percentage change over this first quarter of the year is also shown.

SILVER—CATALYST FOR INDUSTRY

With the April 1985 issue of New Silver Technology, The Silver Institute has described 259 advances in silver catalysis. One of those detailed in the April issue is a new Texaco Chemical Co. process using a 9% silver catalyst for the direct oxidation of propylene oxide for the production of laundry detergents, gasoline additives, synthetic lubricants, and elastomers. United States industries alone are now **using over 2.4 million troy ounces of silver per year as catalysts**.

For future expansion, The Silver Institute is cosponsoring with the American Chemical Society silver catalyst sessions, with presentations by 14 researchers from Germany, Japan, Britain, and the United States, at the May 1-2 National Meeting of the ACS at Miami Beach, Florida.

LATEST SILVER INSTITUTE REFINING STATISTICS

Production and Disposition of **999 Silver** by All Known Refiners in the United States

	TROY OUNCES		MILLION TROY OUNCES		
	February 1985	January 1985	Jan-Feb 1985	Jan-Feb **1984	Full Year 1984
THESE REFINERS' PRODUCTION, BY SOURCE			MONTHLY RATE		
From Primary (ores & concentrates)	4,317,392	3,996,740	4.2	4.5	4.6
From Coins	0	0	0.0	0.0	0.0
From Old Scrap (used photo film & other products)	2,522,997	2,487,922	2.5	2.3	2.9
From New Scrap (in-plant clippings, waste)*	1,089,518	1,929,359	1.5	1.4	2.2
TOTAL PRODUCTION	7,929,907	8,414,021	8.2	8.2	9.7
DISPOSITION BY THESE REFINERS					
Converted in Plant (consumed in fabricating, etc.)	2,461,374	2,846,866	2.7	2.4	3.6
Shipped Out as 999 Silver	5,308,793	4,207,857	4.8	5.1	5.9
TOTAL DISPOSITION	7,770,167	7,054,723	7.4	7.5	9.5
RESULTING CHANGE OF THESE REFINERS'			TOTAL FOR PERIOD		
STOCKS (Production Minus Disposition)	159,740	1,359,298	1.5	1.5	2.8
THESE REFINERS' STOCKS AT END OF PERIOD	5,443,916	5,284,176	5.4	2.6	3.9

Production and Disposition of **999 Silver** by All Known Refiners in Australia, Canada, Mexico, Peru, South Africa, Sweden, and West Germany; and some other Refiners in Europe and Asia.

	TROY OUNCES		MILLION TROY OUNCES		
	February 1985	January 1985	Jan-Feb 1985	Jan-Feb 1984	Full Year 1984
THESE REFINERS' PRODUCTION, BY SOURCE			MONTHLY RATE		
From Primary (ores & concentrates)	14,792,188	13,998,886	14.4	13.9	13.4
From Coins	217,662	62,075	0.1	0.1	0.1
From Old Scrap (used photo film & other products)	4,296,132	3,454,443	3.9	4.5	3.9
From New Scrap (in-plant clippings, waste)*	909,419	824,545	0.9	1.0	0.9
TOTAL PRODUCTION	20,215,401	18,339,949	19.3	19.5	18.3
DISPOSITION BY THESE REFINERS					
Converted in Plant (consumed in fabricating, etc.)	1,174,631	1,363,156	1.3	2.5	1.6
Shipped Out as 999 Silver	15,337,138	17,203,542	16.3	16.8	16.7
TOTAL DISPOSITION	16,511,769	18,566,698	17.5	19.3	18.4
RESULTING CHANGE OF THESE REFINERS'			TOTAL FOR PERIOD		
STOCKS (Production Minus Disposition)	3,703,632	−226,749	3.5	0.5	−0.6
THESE REFINERS' STOCKS AT END OF PERIOD	8,732,968	5,029,336	8.7	6.4	5.3

* PRODUCTION From New Scrap is 999 silver made from in-plant clippings, spillage, sweepings, etc., generated during manufacturing processes. ** Includes figures of refiners in addition to those included in figures published a year ago.

THE SILVER INSTITUTE
A WORLDWIDE ASSOCIATION OF MINERS, REFINERS, FABRICATORS AND MANUFACTURERS
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THE SILVER INSTITUTE LETTER

INFORMATION ON SILVER FOR INDUSTRY

VOLUME XV NUMBER 3 JUNE 1985

SILVER INSTITUTE ELECTS NEW LEADERSHIP AT 15TH ANNUAL MEETING

Over one hundred official representatives of member companies and guests met at the Yale Club in New York City on June 17-18, to participate in the holding of the 15th Annual Meeting of The Silver Institute—the world's largest association of miners, refiners, bullion dealers, and manufacturers of silver and silver products.

The election of new Silver Institute officers and directors reflected the vibrant international character of this association of 109 companies from 20 nations, and all continents. Twenty-four of the Institute's newly elected 39-man Board of Directors represent non-U.S. companies, as do 6 of the Institute's 11 officers.

Incoming President of The Silver Institute, Werner Knies, Incoming Chairman of the Institute Board of Directors. Richard Osborne, Outgoing Chairman of the Board, William Griffith, and Incoming Executive Director John Lutley, newly elected officers of The Silver Institute.

Mr. Richard de J. Osborne of ASARCO Inc. was elected Chairman of the Board of The Silver Institute and Werner Knies of West Germany's Degussa AG, was elected President of the Institute. Mr. Knies joined Degussa AG in 1948 and now has worldwide responsibility for Degussa's precious metals trading and refining. In addition, he is a Director of Degussa.

Following the announcement of the retirement of Richard L. Davies—who has served as Executive Director and Secretary of the Silver Institute since its founding in 1971—President Werner Knies honored Mr. Davies for his service and many contributions to the progress and growth of the Institute.

To succeed Mr. Davies, Institute members elected Mr. John H. Lutley who recently retired as Director of Johnson Matthey PLC, and was their senior executive in North America. Mr. Lutley received an Honors Degree in Metallurgy from Cambridge University in England in 1958. Since then, he has had experience in all aspects of the international precious metals industry.

As Secretary and Executive Director of the Institute, Mr. Lutley will direct a variety of programs designed to extend the uses of silver in industry, in the arts, and as an investment. These programs include sterling silver, silver in medicine, in catalysis, in bearings, in solders, and alloys.

The Vice Presidents elected to represent the following areas of the world are: for Canada, Neil M. Kemp of INCO Ltd.; for Eastern U.S., Ronald F. Davies of Ames Goldsmith Corp.; for Western U.S., Thomas A. Campbell, Jr. of Nerco Minerals Co.; for Mexico and Central America, Jorge E. Ordonez C. of Frisco S.A. de C.V.; for South America, Alberto Benavides Q., of Cia. de Minas Buenaventura, S.A.; for Europe and Africa, Robert Guy, of N. M. Rothschild & Sons; for Australia and Asia, Goeffrey Lloyd Rae, Broken Hill Associated Smelters Pty. Ltd. Elected as Treasurer, William P. Lohden, of Callahan Mining Corporation.

NEW BRILLIANCE OF STERLING SILVER

William Chaney, Tiffany Chairman, displays beautiful example of the silversmith's art.

For a few hours on the evening of June 17, the 18th floor of the Yale Club was a beacon in the nightscape of New York City, reflecting a glowing, glittering new brilliance of some of the most beautiful sterling silver products ever manufactured by several of the world's greatest silversmiths.

Before listening to a fascinating talk on "Creation of Sterling Silver Designs" by the Chairman of the Board of Wallace-International Silversmiths, Inc., Robert F. Wilson, and an entertaining historical commentary on "The Origins of Sterling Silver" by a Founding Director of the Silver Institute, Simon D. Strauss, many of the leading figures of the international silver industry community had an opportunity to admire artistic sterling silver products of Gorham, Kirk Stieff, Lunt, Oneida, Reed & Barton, Tiffany, Towle, and Wallace-International—all displayed in a single room!

In addition to displaying superb examples of the products of their firms, representatives of the top management of leading silversmiths—including James W. Thomas of Gorham, Charles C. Stieff of Kirk Stieff, Denham C. Lunt of Lunt, Peter J. Sanderson of Oneida, G. Kelvin White of Reed & Barton, William R. Chaney of Tiffany, Edward W. Mulligan of Towle, and Robert F. Wilson of Wallace-International—met with leaders of the Silver Institute to discuss ways of developing new high volume markets for sterling silver products.

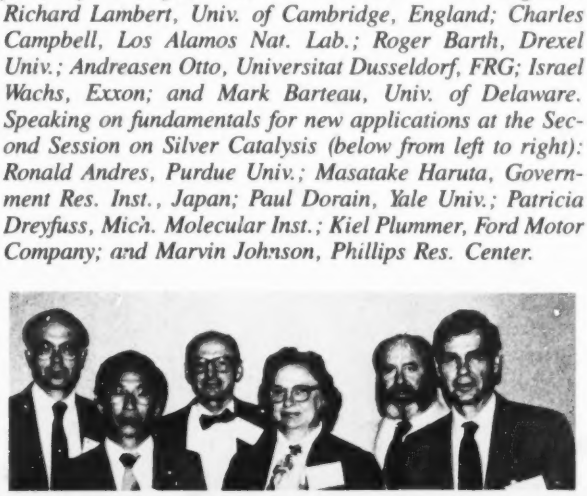
Top silversmith company executives display superb sterling silver. Upper left, Peter Sanderson, Oneida Limited, with fluted bowl; upper right, James and Alice Thomas, discuss Gorham tea service; lower left, Pricilla and Charles Stieff, admire Stieff "Lafayette" goblet; and lower right, Edward Mulligan and John Lutley inspect popular small sterling items.

OVER 2.5 MILLION TROY OUNCES OF SILVER TO BE USED IN CATALYSIS

New research breakthroughs will lead to wider usage of silver in catalysis, according to reports presented at the *first* international symposium on silver in catalysis. In turn, this is expected to increase the 2.5 million troy ounces of silver used in catalysts in the U.S. in 1984.

A large professional audience attended this Silver in Catalysis Symposium which was jointly sponsored by **The Silver Institute** and the **American Chemical Society** at the latter's 189th National Meeting in Miami Beach, Florida on May 1 and 2. It featured the presentation of 14 research reports by scientists from four countries, noted Samuel F. Etris, of the Silver Institute who presided.

Speaking on how silver functions as a catalyst for chemical production at the First Session on Silver Catalysis (above from left to right): Michael Bowker, I.C.I., England; Richard Lambert, Univ. of Cambridge, England; Charles Campbell, Los Alamos Nat. Lab.; Roger Barth, Drexel Univ.; Andreasen Otto, Universitat Dusseldorf, FRG; Israel Wachs, Exxon; and Mark Barteau, Univ. of Delaware. Speaking on fundamentals for new applications at the Second Session on Silver Catalysis (below from left to right): Ronald Andres, Purdue Univ.; Masatake Haruta, Government Res. Inst., Japan; Paul Dorain, Yale Univ.; Patricia Dreyfuss, Mich. Molecular Inst.; Kiel Plummer, Ford Motor Company; and Marvin Johnson, Phillips Res. Center.



One session was devoted to developing an understanding of how silver functions and the second session to new applications. Breakthroughs reported by the scientists included the discovery that the addition of certain elements, such as chlorine, result in a marked increase in the purity of the reaction products. In other experiments, similar results were achieved by adding alloying metals such as palladium or gold. In both cases, the resulting "improved purity of product" means that silver is now producing additional, more valuable chemicals, such as those required by the flexible plastics industry.

Another breakthrough allows one to "see" just how silver works in catalysis by directing a laser beam at a silver surface—a process called surface enhanced Raman spectroscopy. This new knowledge increases the usefulness of silver, both in the laboratory and in the production plant.

A review of these reports is available from the Institute offices.

999 FINE SILVER STATUES OF LIBERTY, ONLY $20,000 EACH!

In 1876, Frederic Auguste Bartholdi designed a model for the Statue of Liberty whose mould is now being used to create a unique edition of 100 numbered pure silver sculptures of this statue of world renown. These impressive statues are being produced in France by the same firm, N. Arthur Bertrand Co., that worked closely with Mr. Bartholdi in the production of the original statue of "Liberte".

According to Philip F. Friedman, Chairman of Silversmiths Group International, Inc., 700 West Hillsboro Blvd., Deerfield Beach, FL 33441, "Our firm is truly privileged to offer these beautiful silver sculptures from the original mould because they are lasting tributes to the sculptor Bartholdi and to the symbol of liberty they represent."

Each sculpture contains 1000 troy ounces (70 pounds) of pure 999 fine silver and bears a silver mark of purity as well as a letter of authentication by French government officials and the foundry. Mr. Friedman believes that these pure silver Statues of Liberty "will be highly sought after by art connoisseurs and collectors for their beauty and sound investment potential." By May 21, said Mr. Friedman, "Nearly half the edition has been sold in just two weeks!"

CONGRESS AUTHORIZES NEW SILVER STATUE-OF-LIBERTY COMMEMORATIVE COIN AND LIBERTY BULLION COIN

On June 24, the U.S. Congress authorized the mintage of 10 million, **one-dollar silver coins** whose design will be emblematic of the use of Ellis Island as a gateway to America. The 90% silver coins will carry a $7 surcharge to help finance the refurbishing of the Statue of Liberty and the rehabilitation of Ellis Island. In addition, Congress also authorized the unlimited mintage of a **silver bullion coin**, weighing one troy ounce of 999 fine silver. It will carry a face value of One Dollar, with a symbol of Liberty on the obverse and an eagle on the reverse.

INSTITUTE SYMPOSIUM DISSEMINATES NEW SILVER LUBRICATION TECHNOLOGY

A joint symposium on the lubricative properties of silver, sponsored by The Silver Institute, was presented on May 7 at the Annual Meeting of the American Society of Lubrication Engineers in Las Vegas, Nevada.

This symposium came at a time when there is a major effort toward the designing of automobile engines that will operate at temperatures approaching 1800°F. Engines operating at such temperatures will use their fuel far more economically than those in present use, but according to a spokesman of the Cummings Engine Co., problems related to friction and lubrication are "the limiting factors in engine design."

Papers were presented to the more than 45 scientists attending the symposium, showing that silver is by far the best lubricant for it is very stable and provides outstanding lubricity right up to its melting point.

New research discussed at the symposium revealed that plasma sprayed silver provides strong-bonded coatings with considerably longer life than other deposition processes. Also, the addition of micro-sized silver powders to dry lubricants increases their performance at high temperatures, and in rubbery synthetic polymers, it increases their useful life in marine applications.

Reporting on important research on the use of silver in vital aerospace applications, Harold E. Sliney, NASA, Lewis Research Center, said, "There are many people who are not familiar with silver as a lubricant. This symposium will encourage them to look into the proven possibilities of silver."

Silver provides unusual lubricative properties required for high technology applications. In the U.S., 259,000 troy ounces of silver were used in 1984 to meet these demands. The lubrication engineers symposium shows that there are still more possibilities for silver on the horizon.

Information about the symposium can be had from the Silver Institute.

Presenting the usefulness of silver as a lubricant for high technology applications at the joint ASLE-Silver Institute Symposium on Silver Technology are: Martin Devine, General Technology, ASLE chairman; A.R. Miedema, Philips Research Laboratories, author; Bharat Bhushan, IBM Corp., author; Stanley Gray, Mechanical Technology, Inc., author; and S. F. Etris, The Silver Institute, session chairman.

LOW REFINERS STOCKS OF 999 COMMERCIAL SILVER

The figures below show the monthly rate of production of 999 commercial silver by the participating refiners, and the stocks of 999 commercial silver which these refiners hold. When the monthly rate is translated into a daily rate and that is divided into the amount of stocks, the result is the number of days refined production represented by the existing stocks.

For the U.S. and Non-U.S. refiners in the various periods recorded below, it will be seen that the stocks have varied between 7 days and 18 days of production; and that for the latest period, ending April 30th, both the U.S. refiners and the Non-U.S. **refiners stocks represented only 11 days—less than a half a month—of their production.**

LATEST SILVER INSTITUTE REFINING STATISTICS

Production and Disposition of **999 Silver** by All Known Refiners in the United States

	TROY OUNCES		MILLION TROY OUNCES		
	April 1985	March 1985	Jan-Apr 1985	Jan-Apr **1984	Full Year 1984
THESE REFINERS' PRODUCTION, BY SOURCE			MONTHLY RATE		
From Primary (ores & concentrates)	4,269,835	4,148,325	4.2	4.8	4.6
From Coins	0	0	0.0	0.0	0.0
From Old Scrap (used photo film & other products)	2,665,579	2,283,739	2.5	2.5	2.9
From New Scrap (in-plant clippings, waste) *	2,302,287	2,212,716	1.9	1.6	2.2
TOTAL PRODUCTION	9,237,701	8,644,780	8.6	8.9	9.7
DISPOSITION BY THESE REFINERS					
Converted in Plant (consumed in fabricating, etc.)	3,592,581	2,968,297	3.0	2.8	3.6
Shipped Out as 999 Silver	7,016,507	6,220,225	5.7	5.8	5.9
TOTAL DISPOSITION	10,609,088	9,188,522	8.7	8.6	9.5
RESULTING CHANGE OF THESE REFINERS'			TOTAL FOR PERIOD		
STOCKS (Production Minus Disposition)	−1,371,387	−543,742	−0.4	1.1	2.8
THESE REFINERS' STOCKS AT END OF PERIOD	3,528,787	4,900,174	3.5	2.2	3.9

Production and Disposition of **999 Silver** by All Known Refiners in Australia, Canada, Mexico, Peru, South Africa, Sweden, and West Germany; and some other Refiners in Europe and Asia.

	TROY OUNCES		MILLION TROY OUNCES		
	April 1985	March 1985	Jan-Apr 1985	Jan-Apr 1984	Full Year 1984
THESE REFINERS' PRODUCTION, BY SOURCE			MONTHLY RATE		
From Primary (ores & concentrates)	14,672,940	13,648,207	14.3	13.8	13.4
From Coins	57,740	114,864	0.1	0.1	0.1
From Old Scrap (used photo film & other products)	3,391,030	4,416,498	3.9	4.4	3.9
From New Scrap (in-plant clippings, waste) *	811,132	970,813	0.9	1.0	0.9
TOTAL PRODUCTION	18,932,842	19,150,382	19.2	19.2	18.3
DISPOSITION BY THESE REFINERS					
Converted in Plant (consumed in fabricating, etc.)	1,467,761	1,259,880	1.3	2.1	1.6
Shipped Out as 999 Silver	15,608,272	21,799,379	17.5	16.7	16.7
TOTAL DISPOSITION	17,076,033	23,059,259	18.8	18.9	18.4
RESULTING CHANGE OF THESE REFINERS'			TOTAL FOR PERIOD		
STOCKS (Production Minus Disposition)	1,856,809	−3,908,877	1.4	1.4	−0.6
THESE REFINERS' STOCKS AT END OF PERIOD	6,680,900	4,824,091	6.7	7.3	5.3

* PRODUCTION From New Scrap is 999 silver made from in-plant clippings, spillage, sweepings, etc., generated during manufacturing processes. ** Includes figures of refiners in addition to those included in figures published a year ago.

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THE SILVER INSTITUTE LETTER

INFORMATION ON SILVER FOR INDUSTRY

VOLUME XV NUMBER 4 AUGUST 1985

MANY BENEFIT FROM MINING OF BILLION OUNCES OF SILVER

On August 4, the Coeur d'Alene Mining District of Northern Idaho commemorated the production of its one billionth ounce of silver. The Coeur d'Alene Mining District had its beginning in 1884, and in its 100th year, 1984, this district alone accounted for more than 40 percent of the newly mined silver of the United States.

Although only about 30 miles long and 10 miles wide, its extensive mineralization has produced one billion ounces of silver, marking Coeur d'Alene as the world's leading proven silver mining area, according to Dennis E. Wheeler, Chairman of the Idaho Mining Association.

Silver miners show plaque commemorating the mining of the one billionth troy ounce of silver from the Coeur d'Alene Mining District of Northern Idaho, USA

Mining community leaders noted that in addition to taking minerals from the earth, **mining firms can be proud of their contributions to the economic and social progress of their community and of Idaho.** For example, the major mining companies that are sponsoring this commemorative event—ASARCO Inc., Bunker Ltd. Partnership, Callahan Mining Corporation, Coeur d'Alene Mines Corp., Hecla Mining Co., and Sunshine Mining Co.—provided employment for more than 2000 workers, have conserved the environment, and have paid state and federal taxes amounting to over $46 million in the last five years.

Noting the importance of the mining industry to Idaho, Congressman Larry Craig, Republican, Idaho, said that Idaho continued to rank as the nation's most important silver producer in 1984 by producing nearly 18.9 million ounces, or more than 42% of the total 1984 US output of 44.4 million ounces.

"Although most people associate silver with money or bullion bars," said Congressman Nick J. Rahall, II, Democrat, West Virginia, Chairman, House Subcommittee on Mining and Natural Resources, "we can be proud of the fact that silver is much more than merely bullion. Millions of people who have suffered from serious burns have been cured by silver-based medication. Silver makes it possible to take X-ray pictures. It makes dreams of solar power a reality. And millions of happy memories have been captured on silvered film. **Silver is, indeed, a metal that we can all be proud to be associated with."**

CANADA PLANS TEN STERLING SILVER COINS TO SUPPORT CALGARY 1988 OLYMPIC WINTER GAMES

The Royal Canadian Mint will launch its Olympic coin program in Calgary on September 16. There the first two designs of the ten-design issue of $20 sterling silver commemorative coins will be sold. **The Olympic coins, in order of their release, will portray the following themes:** downhill skiing and speed skating; hockey and biathlon; cross-country skiing and free-style skiing; figure skating and curling; ski-jumping and bobsled. James Corkery, President and Master of the Royal Canadian Mint, added, "Not only do the coins have high intrinsic and nominal values, but they also feature interesting themes. The revenue generated from the coins will be used to directly support the Winter Olympics and athletes worldwide," said Corkery.

NEW FIELDS FOR RESEARCH ON SILVER IN MEDICINE

The Silver Institute recently sponsored an exploratory conference on Silver in Medicine, held at the National Institutes of Health, Bethesda, Maryland. This meeting was attended by eight distinguished physicians and 2 staff members of The Silver Institute.

New advances in the use of silver in medicine discussed by expert medical doctors and professional water purification engineers at National Institutes of Health.

Silver Institute Senior Consultant, Samuel F. Etris opened the meeting by stating that the purpose of this session was to gain an appreciation of the state of research into the use of silver in medicine.

Conferees discussed topics ranging from the use of silver to determine the presence of functional diseases in humans by accurate protein assay, to the use of silver sulfadiazine on herpes zoster, to the stimulation of healing and growth of broken bones and control of deep bacterial infections through the use of surgically implanted silver electrodes.

The physicians also discussed a variety of options for new research. *It was decided that new research efforts should be directed to the use of silver in the treatment of burns and open wounds, the purification of water, the stimulation of growth of bones, and the utilization of silver protein-imaging as an ultra-sensitive diagnostic tool.*

It was proposed that a national conference be held at the National Institutes of Health in the spring of 1986 at which time speakers will discuss medical, surgical, public health, ophthalmologic, silver imaging and electrochemical applications of silver.

Attending the Ad Hoc Committee meeting on Silver in Medicine were: Dr. Charles L. Fox, Professor of Microbiology, Department of Surgery, Columbia University, New York, NY; Dr. N. C. Baenziger, Professor of Chemistry, University of Iowa, Iowa City, IA; Dr. Joseph A. Spadaro, Dept. of Orthopedics, State University of New York, Upstate Medical Center, Syracuse, NY; Dr. Carl R. Merril and Dr. Michael G. Harrington, Clinical Neurogenetics Branch, and Dr. Sanford M. Rosenthal, Emeritus, National Institutes of Health, Bethesda, MD; Mario Angehrn and Herbert A. Koelble, Katadyn Products Ltd., Wallisellen, Switzerland; and Dr. D.M. Vyas, Antitumor Chemistry Laboratory, Bristol-Myers Co., Syracuse, NY.

SILVER TREASURE REMINDS PUBLIC OF ENDURING VALUE OF SILVER

With silver prices stable and a less volatile market, the U.S. media has had very little to say about silver. However, for a few days in July, the silence was broken and once again silver moved onto the front pages, radio waves, and TV screens of the United States. It seemed that all media outlets were reporting that the silver that the King of Spain needed in 1622 finally reached land on July 20, 1985, when Mel Fisher displayed one of the silver treasures taken from the sunken, silver-laden wreckage of the Spanish galleon *"Nuestra Senora de Atocha"* 40 miles west of Key West. Although **the total value of the Atocha's silver coins, silverware, plates, cups and stacks of 75-pound silver ingots is estimated at around $400 million, archeologist Duncan Matthewson estimates the silver treasure's historical and archeological value at "two or three times that".**

SILVER IS AN EFFECTIVE INCENTIVE AWARD

California's Golden State Sanwa Bank used pure 999 fine silver bars supplied by Manfra, Tordella & Brookes (MTB) called SILVER LIBERTY™ Bars in a premium campaign to generate $7.7 million in new certificates of deposit and money market investment account deposits from December 15, 1984 through April 15, 1985. This campaign came to an end on March 8, 1985, when the bank ran out of bars. **Not only was the original goal met, but surpassed: The bank's silver promotion generated $12.7 million and 828 new accounts.**

This is only one of many examples of successful silver incentive programs reported to Silver Institute staff members who manned the Silver Institute booth at the May 6 through 9 Premium/Incentive Show in New York City, and many of the programs were based on ideas and information received from Institute staff when company representatives visited the Silver Institute booth in 1984.

Among the more than 1,000 buyers who visited the Silver Institute booth this year were representatives of PPG Industries, Marshall Field of Chicago, Parker Laboratories, Red Lobster Inns, Union Carbide Corp., and American Greeting Cards. About 500 visitors received the Institute's Incentive Awards Kit containing information and suggestions on how to use silver awards, as well as literature from Silver Institute members supplying products and services to this market. Members who displayed products included Engelhard Corp., Johnson Matthey Inc., Royal Canadian Mint, and Sunshine Mining Co.

EXCELLENT NEW "SILVER" BOOK

SILVER (Mineral Policy Background Paper No. 20) is a title that hardly does justice to the more than 400 page book, written by Thomas Patrick Mohide (pictured), that provides the reader with a well organized and carefully indexed compendium of historical, financial, statistical, and organizational data about silver. It is available from the Ministry of Natural Resources, Public Information Centre, Room 1640, Whitney Block, 99 Wellesley Street West, Toronto, Ontario M7A 1W3, Canada. *Send check or money order for Canadian $15, payable to the Treasurer of Ontario.*

TIFFANY & COMPANY WELCOMED TO MEMBERSHIP

The Silver Institute warmly welcomes **Tiffany & Company,** 727 Fifth Avenue, New York, NY 10022 to membership. The firm's official representative to the Institute is its Chairman of the Board and Chief Executive Officer, William R. Chaney.

NEW LIBERTY TRADE SILVER POPULAR WITH COLLECTORS AND INVESTORS

Publicity now appearing in reference to the restoration of the Statue of Liberty and the striking beauty of the recently released one ounce **Liberty Trade Silver Piece** have combined to make these pieces unusually popular with both collectors and investors. The Liberty Trade Silver Piece, pictured at right, was struck at Johnson Matthey's plant in Rochester, NY, for **Manfra, Tordella & Brookes, Inc.** (MTB), 30 Rockefeller Plaza, New York, NY 10112, and contains exactly one troy ounce of 999 fine silver. The original issue is dated 1985, but later this year the obverse die will be reengraved to read 1986. A "proof" Collector's Edition of this piece can be ordered from MTB for only US$29.95 while the uncirculated piece sells for the spot price of silver plus $1.50. A 10-ounce individually numbered pure silver presentation piece, and several other Liberty Trade Silver pieces—with design changes and of different sizes and weights—will be announced soon by MTB.

SILVER HALIDE JOINS THE COLORFUL COMPUTER

The combination of silver-based photography and computer-based image generation was inevitable. It was achieved following an agreement between the Polaroid Corporation and the Digital Equipment Corporation for the joint marketing of the compatible Digital Rainbow high-resolution personal computer and the Polaroid Palette color image recorder. The Palette recorder provides 72 colors for a single computer image, which can then be projected onto Polaroid silver-based color photographic paper or onto Polaroid instant silver-based 35mm Polachrome transparency film. The self-processing 35mm transparency, instantly processed in Polaroid's AutoProcessor, provides slides ready for projection in Polaroid's Personal Presentation System.

The combination of the colorful computer image and the even more colorful print or transparency depends upon the tiny silver halide crystal. Possessing a light sensitivity far beyond any other material, a 35mm film provides over 10 million silver-halide crystals that become points of color. The very best computer screen displays only about 290,000 dots of color. Thus the 35mm transparency copy of a computer-generated image is sharp and may actually improve the computer image, which when projected has better definition, with deeper colors than the original image.

Industry forecasts predict that the number of presentations incorporating manufacturing, marketing, sales, and financial information presented at business meetings will reach the 100 million level in the next decade. The potential for this market is considerable larger, for there are information accumulation systems recording enormous quantities of data for health, demography, pollution, the area of surface waters, and geological configurations, to name a few. Presentation of these data in easy-to-comprehend multi-color form is advantageous both to the presenter and his audience.

This new combination of silver-halide imagery and computer imagery extends the value of instantaneous photographic systems already in wide use in industry, medicine, and science. All of it is founded upon the unmatched properties of silver halide, whose tiny crystals make these sophisticated systems work.

SILVER COINAGES WILL REDUCE NATIONAL SILVER STOCKPILES

The President of the United States signed Public Law 99-61 which provides for the minting of two important silver coins from the silver stockpiles now held by the U.S. government, thus reducing the 137.5 million troy ounces of silver which has overhung the market for so many years. The Law calls for the minting of 10 million One Dollar, 90% silver coins, weighing 0.86 ounce each. The design of these coins will be emblematic of the Centennial of the Statue of Liberty, and each coin will carry a surcharge of $7.00 for the restoration of the Statue of Liberty and Ellis Island.

No design has yet been announced for the one-ounce One Dollar 999 fine silver bullion coin, none of which will be sold to the public until September 1, 1986, so as not to interfere with the sale of the 10 million "Liberty Coins" which will be introduced to the market in early 1986.

LATEST SILVER INSTITUTE REFINING STATISTICS

Production and Disposition of **999 Silver** by All Known Refiners in the United States

	TROY OUNCES		MILLION TROY OUNCES		
	June 1985	May 1985	Jan-June 1985	Jan-June 1984	Full Year 1984
THESE REFINERS' PRODUCTION, BY SOURCE			MONTHLY RATE		
From Primary (ores & concentrates)	4,711,821	4,556,441	4.4	4.8	4.6
From Coins	0	0	0.0	0.0	0.0
From Old Scrap (used photo film & other products)	2,510,384	2,527,751	2.5	2.7	2.9
From New Scrap (in-plant clippings, waste)*	2,627,956	2,259,340	2.1	1.7	2.2
TOTAL PRODUCTION	9,850,161	9,343,532	8.9	9.1	9.7
DISPOSITION BY THESE REFINERS					
Converted in Plant (consumed in fabricating, etc.)	3,684,141	3,657,351	3.2	3.1	3.3
Shipped Out as 999 Silver	6,615,692	5,906,478	5.9	6.0	6.0
TOTAL DISPOSITION	10,299,833	9,563,829	9.0	9.0	9.3
RESULTING CHANGE OF THESE REFINERS' STOCKS (Production Minus Disposition)	−449,672	−220,297	TOTAL FOR PERIOD −1.0	0.6	2.8
THESE REFINERS' STOCKS AT END OF PERIOD	2,858,818	3,308,490	2.9	1.8	3.9

Production and Disposition of **999 Silver** by All Known Refiners in Australia, Canada, Mexico, Peru, South Africa, Sweden, and West Germany; and some other Refiners in Europe and Asia.

	TROY OUNCES		MILLION TROY OUNCES		
	June 1985	May 1985	Jan-June 1985	Jan-June 1984	Full Year 1984
THESE REFINERS' PRODUCTION, BY SOURCE			MONTHLY RATE		
From Primary (ores & concentrates)	11,359,070	12,699,870	13.6	13.6	13.4
From Coins	60,000	50,444	0.2	0.1	0.1
From Old Scrap (used photo film & other products)	4,100,809	4,148,035	3.9	4.0	3.9
From New Scrap (in-plant clippings, waste)*	932,043	1,052,028	0.9	0.9	0.9
TOTAL PRODUCTION	16,451,922	17,950,377	18.5	18.7	18.3
DISPOSITION BY THESE REFINERS					
Converted in Plant (consumed in fabricating, etc.)	1,841,300	1,609,568	1.5	1.8	1.6
Shipped Out as 999 Silver	15,558,078	17,938,130	17.3	16.8	16.7
TOTAL DISPOSITION	17,399,378	19,547,698	18.7	18.7	18.4
RESULTING CHANGE OF THESE REFINERS' STOCKS (Production Minus Disposition)	−947,456	−1,597,321	TOTAL FOR PERIOD −1.2	−0.1	−0.6
THESE REFINERS' STOCKS AT END OF PERIOD	4,136,123	5,083,579	4.1	5.8	5.3

* PRODUCTION From New Scrap is 999 silver made from in-plant clippings, spillage, sweepings, etc., generated during manufacturing processes.

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THE SILVER INSTITUTE LETTER

INFORMATION ON SILVER FOR INDUSTRY

VOLUME XV NUMBER 5 OCTOBER 1985

SILVER INSTITUTE PLANS EXPANDED INTERNATIONAL PROMOTIONAL OPERATIONS FOR 1986

On September 24, Silver Institute Chairman Richard de J. Osborne of ASARCO Inc. presided over a meeting of the Institute's Board of Directors and officials of member companies held in San Francisco. At the luncheon meeting, Silver Institute President Werner Knies of West Germany's Degussa AG and Edward W. Hoffstatter of Sharps, Pixley, Chairman of the Institute's Operations Committee, reported that in 1986 the Silver Institute will continue to serve as an educational resource center and will publish *The Silver Institute Letter, New Silver Technology,* and the *Mine Production of Silver.*

Master-President James C. Corkery, Royal Canadian Mint; President of The Silver Institute, Werner Knies, Director of Degussa; and Bruce L. Kaplan, Senior Vice President of A-Mark Precious Metals Inc., discuss the presentations they made at The Silver Institute meeting in September.

In addition, **the Institute plans to expand its international promotional activities with special attention to increasing demand for: silver as a portion of investment portfolios; modern silver coinage; sterling silverware; and silver jewelry.** The Institute will also work to expand awareness of the medical uses and benefits of silver and to increase the perception of buyers of premiums and other awards that silver is an excellent, much appreciated premium or incentive-recognition award.

Two talks on silver coins were featured at the Luncheon Meeting. James C. Corkery of the Royal Canadian Mint spoke on "Canada Launches Olympic Coin Program," and Bruce L. Kaplan of A-Mark Precious Metals Inc. spoke on "Successful Marketing of a Silver Bullion Coin." Both are reviewed below.

CANADA LAUNCHES OLYMPIC COIN PROGRAM

On September 18, the Royal Canadian Mint introduced the first two Olympic coins of a ten coin series commemorating the 1988 Olympic Winter Games in Calgary. These two sterling silver coins *(shown below)* depict downhill skiing and speed skating with unusual realism. Each coin contains one troy ounce of pure silver, said James C. Corkery, President and Master of the Canadian Mint.

This Olympic coin series is expected to raise millions of dollars to benefit Olympic athletes, but before launching this program in 20 countries, the Royal Canadian Mint carried out a vast indepth market research project involving interviews with 15,000 people in 8 countries, Mr. Corkery told Silver Institute directors attending the San Francisco Board Meeting.

Based on this research, the combined mintage for all 10 silver Olympic coins has been limited to five million worldwide (500,000 each of 10 coins), of which 3.5 million coins (350,000 sets of 10) have been set aside for subscription purposes. Heavy emphasis will be placed on direct mail in the North American market, he added.

Collectors, sports enthusiasts and the general public can purchase these two coins for $28 (U.S.) each. Those interested should write to: **The Royal Canadian Mint, P.O. Box 346, Station A, Ottawa, Canada K1N 9L5.**

MANY NEW USES OF SILVER

Each quarterly issue of ***NEW SILVER TECHNOLOGY*** presents 60 one-page readable summaries of the most important new uses of silver which have been developed by industrial firms, universities, government agencies, and individual researchers throughout the world. For example:

- *Degussa AG* developed a new silver heat conductor capable of determining the ongoing effectiveness of steel quenching baths.
- *Katadyn Products Inc.* perfected a new silver-based process for removing undesirable odors from wines, beers, and liquors caused by traces of sulfur compounds.
- *Johnson Matthey Inc.* developed a new technology for attaching integrated circuit components to bare ceramic substrates using a silver-loaded glass medium.
- *IBM* imbedded silver-palladium electrodes in non-impact printing heads to provide new high-resolution type for extremely high speed printers, and developed silver-treated paper for them.
- *Hydrotronic de Colombia, S.A.* uses an electrolytic silvering cell, an oxidation cell, and a flow rate detecting cell to provide a safe, easily installed, and cost efficient means of disinfecting water.
- *NGK Spark Plug Co.* discovered a new low thermal expansion silver alloy that provides a strong ceramic-to-metal seal that is ideal for spark plugs and other high technology uses.
- *Tel Aviv University* reports using a silver halide optical fiber and a laser beam to vaporize arterial obstructions that lead to heart attacks. This technique should eventually eliminate the need for heart "by-pass" surgery and permit the treatment of heart patients as outpatients.

The four 1985 issues of ***NEW SILVER TECHNOLOGY***, including the October 1985 issue, may be ordered from The Silver Institute for a nominal charge of US$45 which partially covers printing and postage costs. A subscription to the ***NST*** quarterly for 1986 will remain at US$45 and includes postage.

120% MORE SILVER USED IN COINAGE

In 1981 only 5.9 million troy ounces of pure silver were used in the minting of silver coins. By 1983, this figure had climbed to 9.9 million ounces, and in 1984 over 13 million ounces of silver were used in the minting of silver money, representing an increase of 120%, according to data published in three of the most recent editions of the Silver Institute's annual ***Modern Silver Coinage*** report.

The 13,017,840 troy ounces of silver were used in 1984 to mint 260 issues of legal tender silver coins in 77 countries, reports ***Modern Silver Coinage 1984***. The four largest producers of silver coins were France (3.9 million ounces), Mexico (2.5 million ounces), the United States (2.0 million ounces) and Austria (1.7 million ounces).

Modern Silver Coinage 1984 is a 44 page soft-bound booklet, and is the *only* publication that offers the reader authoritative data on the diameter, weight, percent of pure silver, troy ounces of silver per coin, number of coins and troy ounces of silver used in each issue, as well as a detailed description of the design on each coin. **It is available for only US$15 at The Silver Institute, 1001 Connecticut Avenue, N.W., Washington, D.C. 20036.**

THE SUCCESSFUL MARKETING OF A SILVER BULLION COIN

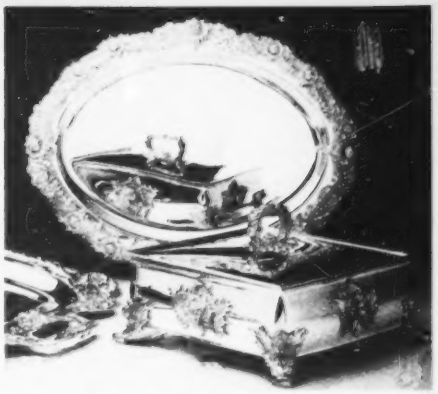
The story of the factors behind A-Mark's successful marketing of Mexico's popular Libertad silver bullion coin was told to Silver Institute directors at the San Francisco meeting by A-Mark's Senior Vice President, Bruce L. Kaplan.

In 1981, A-Mark designed, distributed, and marketed its own highly successful Liberty silver round. Mr. Kaplan added that this experience taught A-Mark **six key factors which were used in the successful selling of Libertad legal tender silver bullion coins.**

First, Mexico's Libertad has spectacular, very marketable design characteristics; **Second,** Because investors prefer a "coin" over a "medallion", Libertad's status as a legal tender coin is important; **Third,** Mexico can assure a continuous and abundant supply of silver bullion coins; **Fourth**, Advertising tells dealers and retail investors that the Libertad is legal tender, portable, easily divisible, attractive and doesn't require an assay on resale; **Fifth**, The Libertad is priced well below commemorative issues having a similar bullion content; and **Sixth**, Liquidity is assured by the fact that the Libertad can be bought and sold at over 2,000 retail distribution points in the USA.

For Libertad silver bullion coin information, write: **A-Mark Precious Metals Inc., 9696 Wilshire Boulevard, Beverly Hills, California 90212.**

CHRISTMAS AT TIFFANY'S—
OVER 1,200 DIFFERENT STERLING SILVER GIFT ITEMS!



Chrysanthemum presentation box - $25,000.

In 1845, a Christmas shopper ordering from Tiffany's catalog would have had to limit his choice of sterling silver gift items to products such as thimbles, card cases, pens and pencils, silver handled parasols, and snuff boxes.

By 1868, Tiffany & Co. was producing at least 68 different flatware service items in one pattern alone. And in 1880, when the Christmas buyer looked for a gift in Tiffany's Blue Book catalog, he found 98 types of sterling silver objects for rooms other than the dining rooms of Victorian America.

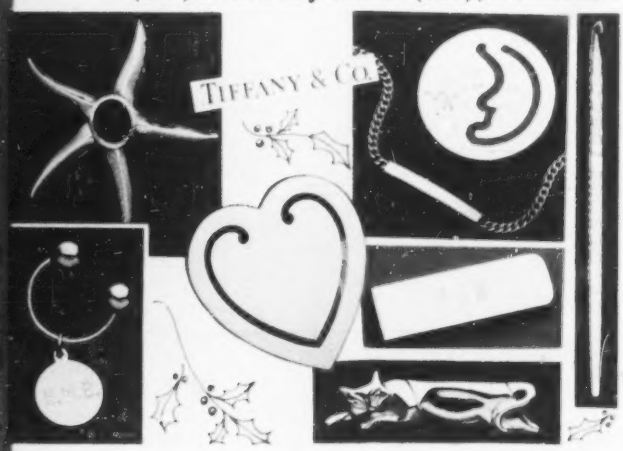
Now, when a Christmas buyer steps off the elevator on the second floor of Tiffany & Co., at Fifth Avenue & 57th Street in New York City, 1,200 different sterling silver products meet the eye. Tiffany's Silver Buyer & Merchandise Manager, Edward Wawrynek, is correct in saying that **Tiffany is maintaining its commitment to provide the public with highest quality sterling silver products**, ranging from a whimsical $24 screwball key ring to a magnificent $25,000 Chrysanthemum presentation box shown above.

Tiffany & Co., a member of the Silver Institute, has also maintained its traditional excellent customer service, said Michael Biondolillo, Assistant Manager, Silver Department. As an example, he noted that for the Christmas shopper-in-a-hurry, Tiffany has a Christmas "spearhead counter" which displays over fifty different beautiful moderately priced sterling silver products, prewrapped in Tiffany blue gift boxes, ready to be promptly picked up by customers.

Among the gifts at the "spearhead counter" is **Tiffany's most popular item—a sparkling diamond textured sterling silver ladies purse pen which sells for $21.** Another favorite is a traditional sterling silver heart bookmark priced at $22.

Other popular sterling silver items include a "return to Tiffany" key ring ($27); a perfume flask ($47) with a tiny funnel ($25); a Paloma Picasso cross pendant with chain ($50); a picture frame ($115); Elsa Peretti designed pendants from $28 to $38; a belt buckle ($95); tie bar ($35); an oil can ($105); thimbles ($24); and a pen knife for $25.

A copy of Tiffany's Fall Selections of 1985 Blue Book may be obtained by calling toll-free to (800) 526-0649.



All but two of the beautiful Tiffany sterling silver products (shown at left) sell for no more than $25 each. The Starfish is priced at $75 and the Cat pin, $75. The other popular sterling gift items follow: Screwball key ring and tag, $24; Heart bookmark $22; I.D. bracelet, $25; Cow-Jumped-Over-The-Moon bookmark, $25. Money Clip, $25; and the diamond textured purse pen, $21.

RECORD YEAR FOR STERLING SILVER GIFT ITEMS

In 1967, Pat Trush opened a shop in Cazenovia, NY, called "Cazenovia Abroad." It offered six imported sterling silver Christmas tree ornaments (see left three shown below). Sales blossomed, and now the shop is a "genuine national wholesaler" with a 32-ornament line (retailing from $45 to $70), supplemented by complete lines of sterling silver jewelry and dresser accessories (most under $100). "Last year was incredibly good," said Mrs. Trush, "and this year should be even better."

To obtain a beautifully illustrated catalogue of items such as these, write to: "Cazenovia Abroad," 67 Albany Street, Cazenovia, NY 13035.

MAJOR REDUCTIONS IN USA SILVER MARKET OVERHANG

According to the Associated Press, the Hunt Family of Texas has sold nearly 90% of its 59 million troy-ounce holdings of silver over the past several months. In addition, the new U.S. Public Law 99-61, which provides for the mintage of both a 10 million issue of One Dollar, 90% silver Statue of Liberty coins, and the subsequent issue of a one-ounce One Dollar 999 fine silver bullion coin of unlimited mintage, requires that the silver used for these mintages be taken only from the U.S. National Defense Stockpile Inventory.

The Hunt's divestiture combined with the sequestering of the 136 million troy ounce silver stockpile for use solely as metal for the minting of silver coins available to the public, reduces the influence these stocks have exerted for the past several years on the silver market.

LATEST SILVER INSTITUTE REFINING STATISTICS

Production and Disposition of **999 Silver** by All Known Refiners in the United States

	TROY OUNCES		MILLION TROY OUNCES		
	August 1985	July 1985	Jan-Aug 1985	Jan-Aug 1984	Full Year 1984
THESE REFINERS' PRODUCTION, BY SOURCE			MONTHLY RATE		
From Primary (ores & concentrates)	4,663,163	5,208,469	4.5	4.8	4.6
From Coins	0	0	0.0	0.0	0.0
From Old Scrap (used photo film & other products)	2,978,446	1,741,811	2.5	2.8	2.9
From New Scrap (in-plant clippings, waste)*	2,243,039	1,627,546	2.0	1.8	2.2
TOTAL PRODUCTION	9,884,648	8,577,826	9.0	9.4	9.7
DISPOSITION BY THESE REFINERS					
Converted in Plant (consumed in fabricating, etc.)	3,818,232	1,916,624	3.1	3.2	3.3
Shipped Out as 999 Silver	6,153,537	6,838,413	6.0	6.0	6.0
TOTAL DISPOSITION	9,971,769	8,755,037	9.2	9.2	9.3
RESULTING CHANGE OF THESE REFINERS'			TOTAL FOR PERIOD		
STOCKS (Production Minus Disposition)	−87,121	−177,211	−1.3	1.6	2.8
THESE REFINERS' STOCKS AT END OF PERIOD	2,594,486	2,681,607	2.6	2.8	3.9

Production and Disposition of **999 Silver** by All Known Refiners in Australia, Canada, Mexico, Peru, South Africa, Sweden, and West Germany; and some other Refiners in Europe and Asia.

	TROY OUNCES		MILLION TROY OUNCES		
	August 1985	July 1985	Jan-Aug 1985	Jan-Aug 1984	Full Year 1984
THESE REFINERS' PRODUCTION, BY SOURCE			MONTHLY RATE		
From Primary (ores & concentrates)	13,641,751	13,053,200	13.5	13.2	13.4
From Coins	61,189	60,577	0.1	0.1	0.1
From Old Scrap (used photo film & other products)	3,148,308	4,587,730	3.9	3.8	3.9
From New Scrap (in-plant clippings, waste)*	872,764	1,116,251	0.9	0.9	0.9
TOTAL PRODUCTION	17,724,012	18,817,758	18.4	18.1	18.3
DISPOSITION BY THESE REFINERS					
Converted in Plant (consumed in fabricating, etc.)	203,186	1,584,655	1.3	1.6	1.6
Shipped Out as 999 Silver	17,886,821	16,305,410	17.2	16.7	16.7
TOTAL DISPOSITION	18,090,007	17,890,065	18.5	18.2	18.4
RESULTING CHANGE OF THESE REFINERS'			TOTAL FOR PERIOD		
STOCKS (Production Minus Disposition)	−365,995	927,693	−0.6	−1.1	−0.6
THESE REFINERS' STOCKS AT END OF PERIOD	4,697,821	5,063,816	4.7	4.7	5.3

* PRODUCTION From New Scrap is 999 silver made from in-plant clippings, spillage, sweepings, etc., generated during manufacturing processes.

THE SILVER INSTITUTE

A WORLDWIDE ASSOCIATION OF MINERS, REFINERS, FABRICATORS AND MANUFACTURERS

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